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ABSTRACT

This study investigates spatial and conceptual role-taking at the preschool level to determine the components of and relationship between these two forms of role-taking. A total of 80 children between 3 and 5 years of age were tested individually on four spatial tasks and five conceptual tasks and rated on the levels of egocentrism employed. Analysis of the data suggests that elementary role-taking problems are most profitably understood in terms of the component skills required to solve them, and that these components have a step-like interlocking nature which suggests a stable path for advancement in the acquisition of role-taking. The decline of egocentrism appears to depend on the presence of functional relationships in the task which do not exceed the capacities of the child. It is suggested that role-taking episodes do not demand overall decentration but that various types of skills are tapped by various role-taking tasks. (GO)

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DECENTRATION REVISITED: A TWO-FACTOR MODEL FOR ROLE-TAKING DEVELOPMENT IN YOUNG CHILDREN

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The concepts of egocentrism, and its decline, decentration, are central in Piaget's theory of development. The transition from embeddedness in one's point of view to the ability to consider perspectives different from one's own is traced by psychologists as the development of role-taking. The interpersonal component of role-taking makes it a very special cognitive measure, crucial to appropriate socialization.

Ill at ease with Piaget and Inhelder's (1956) findings that the decline of egocentrism is not demonstrable until age 7, and the onset of concrete operations, developmental psychologists have themselves shifted perspectives to the preschool years. Role-taking tasks have been simplified such that varying degrees of egocentrism can be demonstrated in children ages 3 to 5. With these findings came pronouncements that "role-taking" and "empathy" had been "found" (or not found) in preschool age children.

In terms of the role-taking literature, a helpful distinction has been to separate the development of the ability to assess others' visual or spatial perspectives, spatial role-taking, from the ability to assess others' internal states, conceptual role-taking. Research efforts have focused mainly on spatial role-taking, most probably because responses to these tasks do not tax the limited verbal abilities of the young child. Spatial role-taking tasks, which show non-egocentric performance in children age 3 to 5, have been developed by Flavell (1968), Fishbein, Lewis, and Keiffer (1972), and recently by Borke (1975).

Conceptual role-taking tasks for preschoolers are essentially absent from the literature, with the exception of DeVries' (1970) work, where behavioral responses were used to infer cognitive strategies.

The present study adds to the assessment strategies by developing conceptual role-taking tasks for the preschool age range. Producing new tests and new evidence for "role-taking" is not nearly as productive, in my opinion, as studying the relationships among these various tasks, with the end in mind to unravel structural components of role-taking. The performance of a young child on a simple task, in which he removes his perspective one degree from center, is surely different from socially sensitive, empathic adult responsiveness. How one gets from A to B is important, and finding the small, cumulative steps which lead to the mature adult response will help immeasureably in understanding and hopefully influencing development.

Given that there are progressive tasks requiring varying sophistication which lead to the mature response, what are the cognitive requirements of these tasks? Further what is the relationship of tasks calling for different cognitive manipulations? What is the nature of the progression? Does one observe egocentrism on the decline over a variety of tasks, or are there task-related progressions, where egocentrism may be on the decline in some tasks, and not in others. Rubin (1973) factor analyzed a variety of conceptual and spatial tasks for children from 5 to 10 and reported one factor, called "Decentration." The implication of this finding is that spatial and conceptual tasks tap precisely the same structures.

In the present study, children ages 3 to 5 were administered various combinations of nine role-taking tasks, four designed to measure spatial role-taking and five designed to tap conceptual role-taking. Two major areas will be investigated: the components of spatial and conceptual role-taking at the preschool level, and the relationship of these two types of role-taking.

METHOD

Subjects

Eighty children from four Kentucky day care centers were subjects. The mean age for the group was 56.5 months. Subjects were distributed over years as follows: 3 years, N = 21; 4 years, N = 25; 5 years, N = 34. Day care centers included one

University lab school, a county-run school for rural children, one church-affiliated center, and one private day care center.

Spatial Tasks: Tasks were variations on, or duplications of, ones originally used by Flavell for this age range.

Cubes: Materials include two identical 8" wooden cubes bearing pictures on four sides. E turns his block to a predetermined picture and requests that S turn his own block to find the same picture. Two trials are administered. The cubes were placed on a pedestal at child's eye level to make for easier rotation.

Three pictures: A 8" x 11" card bears three identical pictures in identical positions on both sides. After a practice trial, E obviously masks one of the pictures on E's side and asks S to predict what E sees. Two trials are administered.

Doxes: Three rectangular boxes bear identical pictures at two opposite ends. E uses a card to mask one picture on E's side and asks S to predict what E is seeing.

Paddle: A circular see-through screen has identical pictures on both sides of four quadrants. Each picture has an identical one at its back. E masks one picture on E's side, and asks S to predict what E was seeing. Two trials are administered.

Tasks were scored according to 3 or 4 stages, with egocentric performance in one or both trials receiving the lowest score, and accurate performance in both trials, the highest. Instruction and scoring criteria may be obtained from the author.

Conceptual Tasks: The four conceptual tasks, Truck, Horse, Stove, and Drum, are variations on Selman's (1971) tasks which require a child to guess what another would choose when the subject has access to information, and the other does not. Tasks included stimuli of very high association value which were: truck-garage, horse-barn, stove-frying pan, and drum-drumstick. The truck and horse pairs not only are high in association value but also "belong" in their related objects. In the task, the pan, truck, drumstick, or horse was hidden under a plain bowl, while S was watching, and its related pair placed beside the bowl. S was asked

to predict where a hypothetical other would guess the item was hidden-under the barn, garage, stove or drum or under the bowl. Ss were asked for an explanation of why they chose. Scores were assigned to three stages: 1) egocentric, choice of the bowl; 2) non-egocentric, choice of related item but not satisfactory explanation or 3) non-egocentric-understanding, choice of related object and satisfactory explanation of the reasoning process.

A fifth conceptual task, Gift Choice, was identical to Flavell's (1968) tasks. Ss are requested to choose a "gift" for mother, father, teacher, and self, from an array of necktie, panty hose, doll, toy truck, and adult book. Three stages of gift-appropriateness were identified.

Procedure: Subjects were tested individually by five college-age examiners, three female and two male. All testing was done in the nursery school setting in a quiet place away from the group. Order of task administration was rotated.

RESULTS

Scores of individual tasks were factor analyzed using the varimax rotation method, and results are reported in Table 1. The four hiding-guessing tasks loaded on one factor labelled "Conceptual," with r's ranging from .77 to .85. This factor accounted for 40% of the variance, and included a zero-order correlation with Gift Choice. Chronological Age correlated r = .41 with this factor.

The three spatial tasks which involved masking (Paddle, Boxes, and Three Pictures) loaded highly in the negative direction on a second factor, which accounted for 37% of the variance. Correlations of tasks with this factor, labelled "Passive Spatial," ranged from r = -.77 to r = -.85. Gift Choice had a moderate negative loading (r = -.52) and age correlated r = -.47.

The Cubes task by itself constituted an independent source of variation, loading r = .79 on a third factor which also had a moderate positive correlation with Gift Choice (r = .51), and correlation of r = .43 with age.

Insert Table 1 About Here

For the 34 children who had taken all nine tasks, factor scores were computed by totalling those tasks loading on each factor. The scatterplot for comparison of Passive Spatial and Conceptual Scores, illustrated in Figure 1, shows that in only 2 cases did the Passive Spatial scores exceed the conceptual scores, where nearly identical scores were possible for each factor.

The relationship of the Cubes scores with Conceptual and Passive-Spatial scores was examined by dichotomizing both into egocentric and non-egocentric categories. Performance on the Cubes task is unsystematically related to performances on either of the other factors. Several children performing egocentrically on the Cubes accomplished the other tasks with non-egocentric facility, and vice-versa.

DISCUSSION

What do these results have to say about role-taking development in these early stages? The finding of three different factors implies that separate structural capacities are involved in the different tasks all of which share the general requirement that one must suppress one's own perspective and predict another's. What specific abilities do these tasks tap?

A child's performance on one hiding-guessing task was basically repeated in all four such tasks. Tasks loading on the conceptual factor required the suppression of a perceptual event. This specific requirement was not required in the Gift Choice task, which involved suppressing one's own choice and making a choice for another based on sex and age stereotypes. Gift Choice was less difficult for children than the hiding-guessing tasks (Gift Choice $\bar{x}$ = 2.1 of 3; Hiding-Guessing $\bar{x}$ = 1.5 of 3). Thus the ability to apply labels correctly probably precedes the ability to suppress perceptual realities, and the latter is more aptly considered a conceptual role-taking task.

What are the components of the ability to suppress a perceptual event? There appear to be several phases of mastery involved in the hiding-guessing tasks, all of which involve the question "How does knowledge come about?" The child must

understand the perceptual basis of knowledge, in this case visual, that seeing and only seeing leads to knowledge. Then the child must discriminate those who have seen from those who do not have access to a "secret" fact. There is an elementary relationship to be learned, that knowledge depends on seeing. Understanding this functional relationship at some level can be observed in young children when the associational links of making the inference are not complicated, when the response required is within the repetoire of the child, and when the experienced event is not emotionally overwhelming. With more complex requirements both of stimulus and response, the appeal of perceptual reality assumes prepotence, a phenomenon illustrated by Fishbein et al. (1972).

Loading on a second factor were the three spatial tasks which involved masking and required the subject to manipulate mentally the array of stimuli before him. The problem involved in all these tasks was: "How does one come to see?" The subject must realize that hiding changes a visual experience in general; the subject must then deduce what is hidden is not seen, and what is not hidden is seen. In these tasks, the subject must check between his card and the masking and choose from his array the correct answer. Suppression of the immediate perceptual field is required for successful performance.

The Cubes task loaded on an entirely separate factor, which suggests that a different ability is tapped by such a task. Unlike the tasks involving masking, the stimulus which was the "answer" was not in front of the subject. They had to produce their own image. "How does one see?" must be solved. The functional relationship that one sees what is looked at and does not see what is not looked at must be acquired for successful resolution of the task. If children understood this relationship, they then had to deduce what in fact E was looking at. Two strategies were observed to be used to this end: 1) a deduction as to what E was seeing, made by eliminating all pictures unavailable to E's field of vision (performed by peering around at the sides of the cubes), and deducing that E was seeing the one left over; and 2) utilizing the notion that E sees the

opposite of the picture facing S, producing a mental image of that picture, and locating it on their own block. The former strategy of elimination resembles the one used in the masking tasks; the latter makes use of front-back relationships and is cognitively more sophisticated.

Returning to the initial query, how are the structural components of these role-taking tasks interrelated? That non-egocentric performance on Passive-Spatial tasks accompanied in almost every instance non-egocentric performance on the Conceptual tasks illustrates the hierarchical nature of these functional relationships, and suggests that Passive-Spatial competence is necessary but not sufficient for Conceptual competence. Although all tasks require suppression of a perceptual event, the cognitive work required by each is not the same. "Role-taking" can be demonstrated in very young children only when required functional relationships are grasped. The present results suggest that a child must understand the nature of how things are seen, and not seen, before he can actively produce a visual perspective, no matter how simple. This information must be acquired before a child can effectively perform in a role taking situation.

The place of skills involved in the Cubes task in the hierarchy is unclear. Knowledge that one sees what is in one's visual field would seem to be required by all the tasks, and so the capacity to make the initial deduction in the Cubes task must be necessary in all tasks; however the availability of two separate strategies, one cognitively more simple than the other, probably confused the results. It is possible that children electing the more complex strategy were likely to perform non-egocentrically on the Conceptual tasks, and those electing the simpler strategy were likely to perform egocentrically on them. Regrettably, since the strategy was not recorded in the experimentation, this hypothesis must be tested in future research. If children attempted the complex strategy and found it too taxing, they would be likely to revert to the egocentric response, found by Hoy (1974) and Fishbein et al. (1972) as the last resort in the face

of a complicated problem. These children egocentric on Cubes may then have performed non-egocentrically on the Conceptual tasks, and on the Passive-Spatial tasks.

Borke (1975) has recently published accounts of successful performance in 3 to 5 year old children in an adaptation of the three mountain task where the child is asked to rotate a "landscape" so that he sees it as a model is seeing a second identical landscape. Like the Cubes task, the S must produce his own visual field; however the stimuli are more complex in Borke's task. What might be the strategies required in this task, and how might they fit in the present collection? Knowledge of front-back and right-left spatial relations are required in Borke's task. To perform it a child might pick out a striking attribute from the stimulus array and see it in relation to some part of the model, whether front, right, or left. He then may place that stimulus in the same relation to himself. A rather complicated functional relationship may be involved in this solution, understanding that the stimulus in relation to the model must be in the same relation with the self. Although further research must place these skills in relation to other role-taking measures, it may be supposed that successful performance on tasks such as the Cubes and the Passive-Spatial would be required for success on Borke's three-mountain. Its role in relation to Conceptual tasks must be made clear in further research.

In conclusion, elementary role-taking problems are most profitably understood in terms of component skills required to solve them. Rather than supposing a general "decline in egocentrism," what is more reasonable is that the decline of egocentrism may be manifested when the functional relationships required for that task do not exceed the capacities of the child. The step-like, interlocking nature of these components suggest a stable pathway for advancement in the acquisition of role-taking. The learning of various notions of what leads to seeing and what leads to knowing is essential to progression to more advanced levels of role-taking. Assuming the role of the other does not demand overall decentration; rather, various types of skills are tapped by various role-taking tasks.

Table 1

Factor Analysis of Role Taking Tasks

	Factor 1 ("Conceptual")	Factor 2 ("Passive-Spatial)	Factor 3 (Cubes)
Age	.33	-.47	.61
Gift 1	.11	-.53	.51
Truck	.77	-.05	.15
Horse	.79	-.30	-.09
Drum	.86	-.20	.20
Stove	.80	-.07	.35
Pictures (3)	.19	-.77	.06
Cubes	.15	.09	.79
Paddle	.07	-.80	.29
Boxes	.18	-.85	-.20

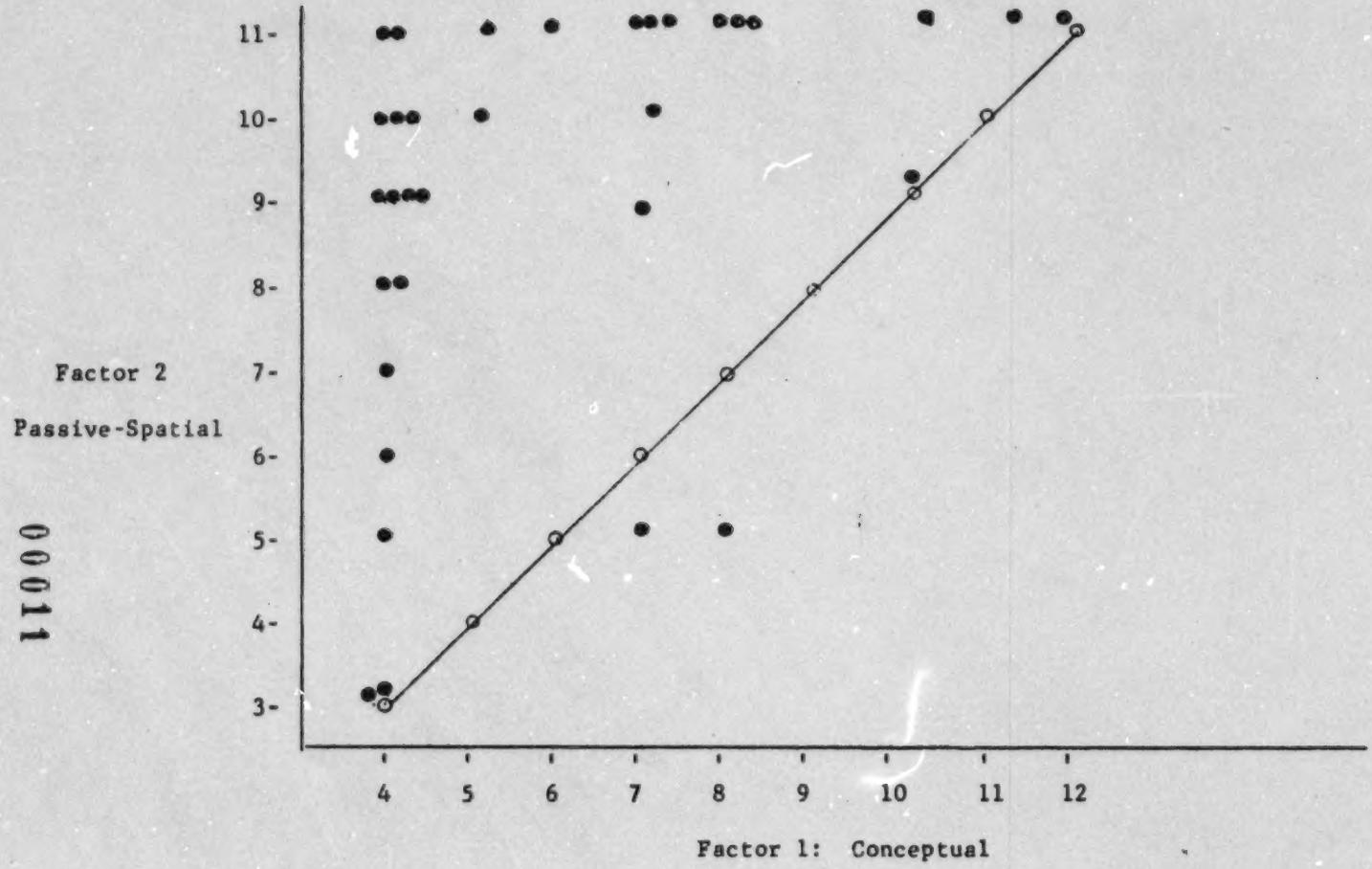

Figure 1: Scatterplot of Conceptual and Passive-Spatial Factor Scores (N=34)

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